MANJARA CHARITABLE TRUST

RAJIV GANDHI INSTITUTE OF TECHNOLOGY

Department of Applied Sciences and Humanities

Mid Term-I 2015 (Sem- II)

Time:1 Hour **Sub: Applied Mathematics –II** **Marks :20**

Q.1 **Solve any five (Each Question Carry 2 marks).** **[10]**

a) Find particular integral for $(D^3 - 2D^2 + D)y = x^2$

b) Solve $(x^2 - 4xy - 2y^2)dx + (y^2 - 4xy - 2x^2)dy = 0$

c) Find Integrating factor for $y\frac{dy}{dx} + \frac{4x}{3} - \frac{y^2}{3x} = 0.$

d) Find complementary function for
$(D^3 - 3D^2 + 9D - 27)y = 0$

e) Find complementary function for $(D^4 + 10D^2 + 9)y = 0.$

f) Find particular integral for $(D^4 + 8D^2 + 16)y = (sinx)^2.$

Q.2 Solve **[5]**

$$(3x + 2)^2\frac{d^2y}{dx^2} + 3(3x + 2)\frac{dy}{dx} - 36y = 3x^2 + 4x + 1.$$

OR

Solve $x\frac{dy}{dx} + y = x^3y^6.$

Q.3 Solve by variation of parameters $(D^2 - 6D + 9)y = \frac{e^{3x}}{x^2}.$ **[5]**

OR

Solve $x^2\frac{d^2y}{dx^2} - 4x\frac{dy}{dx} + 6y = -x^4\,sinx$